

REVISED 06/07

## LSUE COURSE SYLLABUS

<b>I.</b>	<b>Mathematics 1550</b>	<b>Instructor: Mathematics Faculty</b>
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<b>II.</b>	<b>Course description from the current LSUE catalog:</b>
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Analytic Geometry and Calculus I. Lec. 5; Cr. 5.

Analytic geometry, limits, derivatives, integrals. Credit will not be given for both this course and Mathematics 1431.

Prerequisite: A grade of C or better in Mathematics 1021 and 1022, or consent of the Head, Division of Sciences.

<b>III.</b>	<b>Textbook(s) and other required materials:</b>
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Calculus: Early Transcendentals, 6<sup>th</sup> edition by James Stewart.

A graphics calculator is required in this course. The TI-83+ or TI-84+ is recommended.

<b>IV.</b>	<b>Evaluation/grading (policy and basis; number and frequency of tests and papers; weights of particular tests or papers; etc.):</b>
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Semester grades are largely determined by performance on hour exams and a comprehensive final exam. Other factors that may be used in determining grades are homework, pop quizzes, recitation, and attendance. Letter grade assignments will be based upon the ten-point scale.

<b>V.</b>	<b>Policies pertaining to attendance, late work, make-up work, etc.:</b>
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Students are expected to attend class on a regular basis. Any hour exam which is missed will be made up on a pro-rata basis on the final examination. For example, if a student misses Exam #2, then those questions on the final examination which pertain to the topics tested on Exam #2 will determine the student's grade on Exam #2. If a student earns 40 of 50 possible points, from those questions only, then the student earns 80% on Exam #2.

<b>VI.</b>	<b>Course objectives:</b>
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- A. Development of an understanding, awareness, and appreciation of mathematics.
- B. Enhancement of problem solving abilities.
- C. Enhancement of mathematical communication skills, both in written and oral form.
- D. Improvement of critical thinking and reasoning abilities.
- E. Enhancement of understanding of mathematical structure and operations.
- F. Increased use of multi-media technology as a tool for both learning and performing mathematics.
- G. Heightened awareness of the connectiveness of mathematics, and also its relationship to both other disciplines and the real world.

<b>VII.</b>	<b>Major instructional objectives:</b>
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**Upon successful completion of this course, the student should be able to:**

- A. Find limits involving elementary functions.
- B. Recognize the significance of continuous functions.
- C. Use the differentiation formulas, especially the chain rule.
- D. Work with the Fundamental Theorem of Calculus.
- E. Use the derivative and the definite integral in applied problems.
- F. Differentiate and integrate polynomial, trigonometric, exponential, and logarithmic functions.

<b>VIII.</b>	<b>Brief summary of course content by major units of instruction:</b>
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- A. Limits and Derivatives
  - 1. The Tangent and Velocity Problems
  - 2. The Limit of a Function
  - 3. Calculating Limits using the Limit Laws
  - 4. The Precise Definition of a Limit
  - 5. Continuity
  - 6. Limits at Infinity; Horizontal Asymptotes
  - 7. Derivatives and Rates of Change
  - 8. The Derivative as a Function
- B. Differentiation Rules
  - 1. Derivatives of Polynomials and Exponential Functions
  - 2. The Product and Quotient Rules
  - 3. Derivatives of Trigonometric Functions
  - 4. The Chain Rule
  - 5. Implicit Differentiation
  - 6. Derivatives of Logarithmic Functions
  - 7. Rates of Change in the Natural and Social Sciences

8. Exponential Growth and Decay
9. Related Rates
10. Linear Approximations and Differentials
- C. Applications of Differentiation
  1. Maximum and Minimum Values
  2. The Mean Value Theorem
  3. How Derivatives Affect the Shape of a Graph
  4. Indeterminate Forms and L'Hospital's Rule
  5. Summary of Curve Sketching
  6. Graphing with Calculus and Calculators
  7. Optimization Problems
  8. Newton's Method
  9. Antiderivatives
- D. Integrals.
  1. Areas and Distances
  2. The Definite Integral
  3. The Fundamental Theorem of Calculus
  4. Indefinite Integrals and the Net Change Theorem
  5. The Substitution Rule
- E. Applications of Integration
  1. Areas between Curves
  2. Volumes
  3. Volumes by Cylindrical Shells
  4. Work
  5. Average Value of a Function
- F. Further Applications of Integration
  1. Arc Length
  2. Area of a Surface of Revolution
  3. Applications to Physics and Engineering

<b>IX.</b>	<b>Methods of instruction:</b>
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The chief method of instruction is the lecture method along with class discussions of the subject matter.

<b>X.</b>	<b>Brief overview of special instructions:</b>
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Students may seek tutorial assistance in the Tutorial Center.

<b>XI.</b>	<b>Bibliography of supplemental references and/or source materials:</b>
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- A. A film on limits.
- B. A film on the Mean Value Theorem.

<b>ADS</b>	<b>(Americans with Disabilities Act) Statement</b>
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Any student who is a “qualified individual with a disability” as defined by Section 504 of the Rehabilitation Act and Title II of the ADA, and who will need accommodated services (e.g., note takers, extended test time, audiotape, tutorials, etc.) for this course must register and request services through the Office of Academic Assistance Programs, S-150.

<b>CSD</b>	<b>CODE OF STUDENT CONDUCT</b>
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LSUE enforces discipline on campus to protect the academic environment of the campus and the health and safety of all members of the University community. To accomplish this objective, the University enforces standards of conduct for its students. Students who violate these standards can be denied membership in the LSUE community through imposition of disciplinary sanctions.

The LSUE Code of Student Conduct can be found on the LSUE website ([lsue.edu](http://lsue.edu)). Follow the “Current Students” link from the homepage, and then click on “Student Handbook.”